Fresenius' Journal of

Analytical Chemistry

Continuation of Fresenius' Zeitschrift für Analytische Chemie

Editors W. Fresenius and I. Lüderwald

Supported by
Fachgruppe Analytische Chemie
der Gesellschaft Deutscher Chemiker
Represented by
K. Ballschmiter, H. Bode, H. Günzler, K. Heumann, G. Tölg

International Editorial Board

G. den Boef, Amsterdam, The Netherlands
D. T. Burns, Belfast, UK
A. Cedergren, Umeå, Sweden
K. Doerffel, Merseburg, FRG
M. Grasserbauer, Wien, Austria
D. M. Hercules, Pittsburgh, PA, USA
S. Ikeda, Suta, Japan
H. Malissa, Wien, Austria
L. Niinistö, Espoo, Finland
E. Pungor, Budapest, Hungary
S. Tsuge, Nagoya, Japan
M. Valcárcel, Cordoba, Spain
Yu. A. Zolotov, Moscow, USSR

Volume 339 · 1991

Springer International

QD71
.F73

Fresenius' Journal of Analytical Chemistry

Continuation of Fresenius' Zeitschrift für Analytische Chemie

Begründet 1862 und herausgegeben bis Band 20 (1881) von *C. Remigius Fresenius*, bis Band 36 (1897) von *C. Remigius* und *Heinrich Fresenius*, Band 37 – 58 herausgegeben von *Heinrich* und *Wilhelm Fresenius* und *Ernst Hintz*, Band 59 (1920) bis Band 105 von *Wilhelm, Remigius* und *Ludwig Fresenius*, Band 105 (1936) von *Remigius* und *Ludwig Fresenius*, Band 106 bis 127 (1944) von *Remigius Fresenius*, Band 128 (1948) herausgegeben von *A. Kurtenacker*, Band 129 (1949) bis Band 187 (1962) von *W. Fresenius* und *A. Kurtenacker*, Band 188 (1962) bis Band 310 (1982) von *W. Fresenius* und ab Band 311 (1982) von *W. Fresenius* und *I. Lüderwald.*

Bis Band 59 (1919) Wiesbaden, C. W. Kreidel, Band 59 – 62 (1922) Wiesbaden, C. W. Kreidel, und München, J. F. Bergmann, Band 63 – 127 (1944) München, J. F. Bergmann, ab Band 128 (1948) Berlin, Springer, und München, Bergmann.

Copyright

Submission of a manuscript implies: that the work described has not been published before (except in the form of an abstract or as part of a published lecture, review, or thesis); that it is not under consideration for publication elsewhere; that its publication has been approved by all coauthors, if any, as well as by the responsible authorities at the institute where the work has been carried out; that, if and when the manuscript is accepted for publication, the authors agree to automatic transfer of the copyright to the publisher; and that the manuscript will not be published elsewhere in any language without the consent of the copyright holders.

All articles published in this journal are protected by copyright, which covers the exclusive rights to reproduce and distribute the article (e.g., as offprints), as well as all translation rights. No material published in this journal may be reproduced photographically or stored on microfilm, in electronic data bases, video disks, etc., without first obtaining written permission from the publisher.

The use of general descriptive names, trade names, trademarks, etc., in this publication, even if not specifically identified, does not imply that these names are not protected by the relevant laws and regulations.

While the advice and information in this journal is believed to be true and accurate at the date of its going to press, neither the authors, the editors, nor the publisher can accept any legal responsibility for any errors or omissions that may be made. The publisher makes no warranty, express or implied, with respect to the material contained herein.

Special regulations for photocopies in the USA

Photocopies may be made for personal or in-house use beyond the limitations stipulated under Section 107 or 108 of U.S. Copyright Law, provided a fee is paid. This fee is US $ 0.20 per page, or a minimum of US $ 1.00 if an article contains fewer than five pages. All fees should be paid to the Copyright Clearance Center, Inc., 21 Congress Street, Salem, MA 01970, USA, stating the ISSN 0937-0633, the volume, and the first and last page numbers of each article copied. The copyright owner's consent does not include copying for general distribution, promotion, new works, or resale. In these cases, specific written permission must first be obtained from the publisher.

Springer-Verlag, Berlin Heidelberg New York London Paris Tokyo
Printed in Germany by Wiesbadener Graphische Betriebe GmbH, Wiesbaden

© Springer-Verlag, Berlin Heidelberg 1991

Contents of volume 339

Working Party on Analytical Chemistry 1

Introduction 337

Fresenius W, Merian E: Preface 449

Federation of European Chemical Societies (FECS) Working Party on Analytical Chemistry. European Analytical Column 15 (March 1991) 867

Original papers

Ache HJ, see Reichert J, et al. 467
Ackermann G, see Medicus G 226
Akamatsu C, see Takeda K, et al. 50
Albaigés J, see Barceló D, et al. 676
Albaigés J, see Rosell A, et al. 689
Albaigés J, see Simó R, et al. 757
Albaigés J, see Tolosa I, et al. 646
Alegría A, Barberá R, Boluda R, Errecalde F, Farré R, Lagarda MJ: Environmental cadmium, lead and nickel contamination: possible relationship between soil and vegetable content 654
Alencastro LF, see Tolosa I, et al. 646
Al-Hashash H, see Morel G, et al. 699
Almallah M, see Mille G, et al. 788
Al-Matrouk K, see Morel G, et al. 699
Amran MB, see Morin P, et al. 504
Andersson A, Bergh T: Pesticide residues in fresh fruit and vegetables on the Swedish market, January 1985 – December 1989 387
Andersson A, Pålsheden H: Comparison of the efficiency of different GLC multi-residue methods on crops containing pesticide residues 365
Andreoni V, see Rindone B, et al. 669
Angerer J, Scherer G, Schaller KH, Müller J: The determination of benzene in human blood as an indicator of environmental exposure to volatile aromatic compounds 740
Ariese F, Gooijer C, Velthorst NH, Hofstraat JW: Shpol'skii fluorimetric determination of polycyclic aromatic hydrocarbons in complex environmental samples 722
Arik N, Türker AR: Investigation on the preconcentration of trace elements on polyacrylonitrile 874
Arpadjan S, see Djingova R, et al. 181
Arranz JF, see Goicolea MA, et al. 166
Atreya NC, see Bolygó E 423
Azarraga LV, see Susetyo W, et al. 624

Bächmann K, see Kessel M 754
Bächmann K, see Lohleit M, et al. 470
Baj A, see Sesana G, et al. 485
Balestreri S, see Sesana G, et al. 485
Balinova AM, Balinov I: Determination of herbicide residues in soil in the presence of persistent organochlorine insecticides 409
Balinov I, see Balinova AM 409
Barberá R, see Alegría A, et al. 654
Barceló D, Solé M, Durand G, Albaigés J: Analysis and behaviour of organophosphorus pesticides in a rice crop field 676
Barrio RJ, see Goicolea MA, et al. 166
Baumann RA, Ernst GF, Jansen JTA, de Kok A, Olthof PDA, Tuinstra LGMT, Verwaal W, van Zoonen P, Hernandez Hernandez F: Development of a multiresidue method for nitrogen-containing pesticides. Part 1: Preliminary results 357
Bayona JM, see Tolosa I, et al. 646
Bayona JM, see Valls M 212
Bergh T, see Andersson A 387
Bertrand JC, see Mille G, et al. 788
Bianchi M, see Mille G, et al. 788
Binding N, Witting U: Evaluation of a passive sampler for airborne formaldehyde 218
Blaß W: Determination of methyl carbamate residues using on-line coupling of HPLC with a post column fluorimetric labeling technique 340
Bockhorn A, see Stan H-J 158
Boluda R, see Alegría A, et al. 654
Bolygó E, Atreya NC: Solid-phase extraction for multi-residue analysis of some triazole and pyrimidine pesticides in water 423
Bouloubassi I, Saliot A: Sources and transport of hydrocarbons in the Rhone delta sediments (Northwestern Mediterranean) 765
Brauch H-J, Schullerer S: Strategy for pesticide control in ground water and drinking water 420
Brennecke R: The use of extraction columns for pesticide residue analysis of plant material and beverages 399
Briški F, see Cerjan-Stefanović Š, et al. 636
Brune H, see Grimmer G, et al. 792
Buchberger W, see Stitz A 55
Budínska V, see Oriňák A, et al. 436
Burger R, see Sofic E, et al. 258

Cacho J, see Nerin C, et al. 684
Cariati F, see Rindone B, et al. 673
Carreira LA, see Susetyo W, et al. 624
Carr JE, see Lee SM, et al. 376
Ceccarelli C, see de Benzo ZA, et al. 235
Cerjan-Stefanović Š, Briški F, Kaštelan-Macan M: Separation of silver from waste waters by ion-exchange resins and concentration by microbial cells. Silver uptake by microbial cells from treated waste waters after ion exchange 636
Cerveró C, see Mañes J, et al. 658
Chau YK, Wong PTS: Recent developments in speciation and determination of organometallic compounds in environmental samples 640
Chen M-J, see Liu C-Y, et al. 877
Chen X-L, see Fan D-F 434
Chico Guijarro E, Yáñez-Sedeño P, Pingarrón Carrazón JM, Polo Díez LM: Voltammetric determination of 4-chloro-3-methylphenol at a glassy carbon electrode 193
Christall B, see Stan H-J 395
Ci Y-X, Wang F: Catalytic effects of peroxidase-like metalloporphyrins on the fluorescence reaction of homovanillic acid with hydrogen peroxide 46
Colom-Altés M, see Simó R, et al. 757
Combet E, see Morel G, et al. 699
Consalter A, Guzzo V: Multiresidue analytical method for organophosphate pesticides in vegetables 390
Coquart V, see Hennion M-C, et al. 488
Coquet A, Descombes AA, Veuthey J-L, Haerdi W: Comparison between phenylboronic acid and iron loaded silicas to selectively preconcentrate catecholamines on-line coupled with HPLC 475

Danzer K, see Einax J, et al. 169
de Benzo ZA, Velosa M, Ceccarelli C, de la Guardia M, Salvador A: Application of the slurry technique to biological materials: a survey of literature 235

Dedek W, Wenzel K-D, Oberländer H, Mothes B,: Männig J: Preconcentration of hydrophilic and hydrophobic pesticides from aqueous solutions and extraction of residues using the polymeric sorbent Wofatit Y 77. II. Extension of the studies to hydrophobic pesticides; aqueous extraction of pesticides from plant material and soil 201
de Kok A, see Baumann RA, et al. 357
de la Guardia M, see de Benzo ZA, et al. 235
del Rio JC, see Gonzalez-Vila FJ, et al. 750
Descombes AA, see Coquet A, et al. 475
Descombes AA, Veuthey J-L, Haerdi W: Optimization of derivatization parameters with 9-fluorenylmethyl chloroformate for amphetamine and catecholamine separation by supercritical fluid chromatography 480
Dettbarn G, see Grimmer G, et al. 792
Djingova R, Arpadjan S, Kuleff I: INAA and flame AAS of various vegetable reference materials 181
Donard OFX, see Quevauviller Ph 6
Donoso L, see Gomez MJ, et al. 664
Ducauze CJ, see Feinberg MH 604
Dunemann L, see Lange-Hesse K, et al. 240
Durand G, see Barceló D, et al. 676
Dzięgielewski JO, see Kupka T, et al. 253

Echarri I, see Nerin C, et al. 684
Egli H, see Kühne RO, et al. 374
Eglinton G, see Poynter J 725
Ehrhardt M, Weber RR: Formation of low molecular weight carbonyl compounds by sensitized photochemical decomposition of aliphatic hydrocarbons in seawater 772
Einax J, Machelett B, Danzer K: On the description of lead pollution in plants caused by traffic under application of robust statistics 169
Ernst GF, see Baumann RA, et al. 357
Errecalde F, see Alegría A, et al. 654
Escrivá C, Morales M, La Orden A, Mañes J, Font G: Determination of polycyclic aromatic hydrocarbons in atmospheric particulate matter of Valencia city 743
Morales M, see Escrivà C, et al. 743

Fachinger C, see Morel G, et al. 699
Fachinger C, see Thomas O, et al. 463
Fan D-F, Chen X-L: Behavior of the fungicide MBAMT in water 434
Farré R, see Alegría A, et al. 654
Farré R, see Mañes J, et al. 658
Favier S, see Morin P, et al. 504
Fegert A, Schepers U, Schwarz B: Determination of mepiquatchloride in animal and plant matrices by ion chromatography with conductivity detection 441
Feinberg MH, Ducauze CJ: Techniques in chemometrical modeling for micro-pollutants assessment 604
Feng H-MC, see Lee SM, et al. 376
Först C, Stieglitz L, Heiler M: Matrix effects of leachates in the determination of volatile priority pollutants by headspace analysis 513
Font G, see Escrivá C, et al. 743

Gao Z, Li P, Zhao Z: Voltammetric determination of traces of cobalt(II) with a chemically modified carbon paste electrode 137
García-Baudín JM, see Pérez S, et al. 413
García-G J-E: Improved method for the determination of triadimefon, triadimenol-A, and triadimenol-B in wheat plants (*Triticum aestivum* L.) and soil samples by gas chromatography 402
Gardyan C, Thier H-P: Application of modern thin-layer chromatographic techniques for confirmation of results in pesticide multi-residue analysis 338
Gödde U, Golloch A: Determination of total chlorine in waste oil 15
Goewie CE, see Hogendoorn EA, et al. 348
Goicolea MA, Arranz JF, Barrio RJ, Gómez de Balugera Z: Differential-pulse adsorptive stripping voltammetry of the herbicides metamitron and isometiozine 166
Golimowski J, Najdeker E: Voltammetric determination of nickel and palladium in plating baths 868
Golloch A, see Gödde U 15
Gómez de Balugera Z, see Goicolea MA, et al. 166
Gomez MJ, Martí I, Donoso L: Acid-base properties of aquatic humic substances isolated from unpolluted tropical black water rivers 664
González E, Hernández L: Study of the electrochemical behaviour of metaclazepam in aqueous media and its determination in biological fluids 187
Gonzalez-Vila FJ, Lopez JL,: Martin F, del Rio JC: Determination in soils of PAH produced by combustion of biomass under different conditions 750
Gooijer C, see Ariese F, et al. 722
Gooijer C, see Schreurs M, et al. 499
Górecki T, see Kozłowski E, et al. 19, 882
Goto S, see Odanaka Y, et al. 368
Griepink B, Maier EA, Muntau H, Wells DE: Certified reference materials chlorobiphenyls (IUPAC nos 28, 52, 101, 118, 153 and 180) in dried sewage sludge – CRM 392 173
Griepink B, Maier EA, Quevauviller P, Muntau H: Certified reference materials for the quality control of analysis in the environment 599
Grimalt JO, see Rosell A, et al. 689
Grimalt JO, see Simó R, et al. 757
Grimm DM, see Susetyo W, et al. 624
Grimmer G, Brune H, Dettbarn G, Jacob J, Misfeld J, Mohr U, Naujack K-W, Timm J, Wenzel-Hartung R: Relevance of polycyclic aromatic hydrocarbons as environmental carcinogens 792
Gsell W, see Sofic E, et al. 258
Guardino X, see Rosell A, et al. 689
Gunji N, see Mochizuki T, et al. 889
Gupta VK, see Raju J 431
Guzzo V, see Consalter A 390

Haberer K, see Weil H 405
Haerdi W, see Coquet A, et al. 475
Haerdi W, see Descombes AA, et al. 480
Häsänen E, see Manninen PKG 620
Hagen A, Mattusch J, Werner G: Flow-rate variated HPLC-/EC-determination of phenols 26
Hankala S, see Tummavuori J, et al. 145
Hasebe K, Hikima S, Yoshida H: Determination of L-lactate by differential pulse polarography with covalently immobilized enzyme on Chitopearl 261
Havezov I, Jordanov N, Ortner HM: Electrothermal AAS determination of bismuth, antimony and tin in high-purity WO_3 871
Heil S, see Stan H-J 34
Heiler M, see Först C, et al. 513
Heimburger R, see Morin P, et al. 504
Heinemann G, see Kühne RO, et al. 374
Henke G: Thallium determination in biological materials by radiochemical neutron activation analysis 245
Hennion M-C, Subra P, Coquart V, Rosset R: Determination of polar aniline derivatives in aqueous environmental samples using on-line liquid chromatographic preconcentration techniques 488
Henze G, see Yao S, et al. 207
Hernández L, see González E 187
Hernandez Hernandez F, see Baumann RA, et al. 357
Heuschneider G, see Sofic E, et al. 258
Hikima S, see Hasebe K, et al. 261
Hillmann R, see Lohleit M, et al. 470
Himberg K, see Sippola E 510
Hjorth J, see Rindone B, et al. 673
Hoffmann P, Paller G, Thybusch B, Stingl U: Determination of stainless steel constituents in plastics 230

Hofstraat JW, see Ariese F, et al. 722
Hogendoorn EA, Goewie CE, van Zoonen P: Application of HPLC column-switching in pesticide residue analysis 348
Holovská K, see Oriňák A, et al. 436
Hu CC, see Liu C-Y, et al. 877
Hunter GF, see Lee SM, et al. 376

Infantes JA, Luque de Castro MD, Valcárcel M: Flow injection determination of oxalate in urine based on an inhibitory effect 58
Inoue Y, see Takeda K, et al. 50
Ishibashi Y, see Mochizuki T, et al. 889
Iwata H, see Mochizuki T, et al. 889

Jacob J, see Grimmer G, et al. 792
Jansen JTA, see Baumann RA, et al. 357
Jarosz J, see Morel G, et al. 699
Jarosz J, see Saber A, et al. 716
Jordanov N, see Havezov I, et al. 871
Jüttner F: Formation of toluene by microorganisms from anoxic freshwater sediments 785

Kaštelan-Macan M, see Cerjan-Stefanović Š, et al. 636
Kessel M, Bächmann K: Long term nonmethane hydrocarbon and halogenated hydrocarbon measurements at three West German sampling sites 754
Klaffenbach P, see Stan H-J 151
Klaffenbach P, see Stan H-J 40
König K-H, see Vest P, et al. 142
Kohri M, see Kujirai O, et al. 133
Koppmann R, see Plass C, et al. 746
Kozłowski E, Sieńkowska-Zyskowska E, Górecki T: Continuous flow thin-layer headspace (TLHS) analysis. I. Conductometric determination of volatile organic halogens (VOX) in tap water 19
Kozłowski E, Sieńkowska-Zyskowska E, Górecki T: Continuous flow thin-layer headspace (TLHS) analysis. II. Spectrophotometric determination of volatile organic halogens (VOX) in water 882
Kühne RO, Egli H, Heinemann G: An improved residue analytical method for phenyl urea herbicides 374
Kujirai O, Yamada K, Kohri M, Okochi H: Simultaneous determination of traces of impurities in high-purity molybdenum and molybdenum trioxide by coprecipitation and inductively coupled plasma-atomic emission spectrometry 133
Kuleff I, see Djingova R, et al. 181
Kumpulainen J, see Plaami S 886
Kupka T, Wawer A, Dzięgielewski JO, Zacharias PS: Simple, rapid and non-destructive detection and determination of phosphines and phosphine oxides in solution by ^{1}H and ^{31}P NMR 253

Lagarda MJ, see Alegría A, et al. 654
Lagrange J, Lagrange P: Voltammetric method for the determination of H_2O_2 in rainwater 452
Lagrange P, see Lagrange J 452
Lange-Hesse K, Dunemann L, Schwedt G: Development of a combined ultra- and diafiltration technique for use in speciation analysis of protein-bound cadmium in plants 240
Langseth W, Nymoen U: Determination of coumarin anticoagulant rodenticide residues in animal liver by high-performance liquid chromatography 249
Lanzerstorfer C, Puxbaum H: The palladium/silver membrane focusing injector – A new inlet system for thermal desorption capillary gas chromatography 223
La Orden A, see Escrivá C, et al. 743
Lawrence JF, Ménard C: Determination of marine toxins by liquid chromatography 494
Lee SM, Papathakis ML, Feng H-MC, Hunter GF, Carr JE: Multipesticide residue method for fruits and vegetables: California Department of Food and Agriculture 376
Legler J, VDLUFA, Section XI, "Environmental-Analysis": Analysis of 10 selected herbicides in water 417
Leroy M, see Morin P, et al. 504
Lesage S: Characterization of groundwater contaminants using dynamic thermal stripping and adsorption/thermal desorption-GC-MS 516
Li P, see Gao Z, et al. 137
Librando V: Chemometric evaluation of surface water quality at regional level 613
Literathy P, see Morel G, et al. 699
Liu C-Y, Hu C-C, Yeh K-Y, Chen M-J: Synthesis of chelating resins and its application in ligand exchange chromatography 877
Llopis A, see Mañes J, et al. 658
Lohleit M, Hillmann R, Bächmann K: The use of supercritical-fluid extraction in environmental analysis 470
Longhi P, see Mussini T, et al. 608
Lopez JL, see Gonzalez-Vila FJ, et al. 750
Luque de Castro MD, see Infantes JA, et al. 58

Machelett B, see Einax J, et al. 169
Männig J, see Dedek W, et al. 201
Maier EA, see Griepink B, et al. 173
Maier EA, see Griepink B, et al. 599
Mañes J, Farré R, Llopis A, Cerveró C: Determination of lead on the airborne particulates of urban Valencia City 658
Mañes J, see Escrivá C, et al. 743
Manley JD, see Snowdon PJ, et al. 444
Manninen PKG, Häsänen E: Multivariate data analysis of some Finnish water courses 620
Marcolungo I, see Mussini T, et al. 608
Martí I, see Gomez MJ, et al. 664
Martin-Bouyer M, see Morel G, et al. 699
Martin-Bouyer M, see Saber A, et al. 716
Martin F, see Gonzalez-Vila FJ, et al. 750
Matano O, see Odanaka Y, et al. 368
Matia L, Rauret G, Rubio R: Redox potential measurement in natural waters 455
Matser AM, see Tuinstra LGMT, et al. 384
Mattusch J, see Hagen A, et al. 26
Medicus G, Ackermann G: Universal method for X-ray fluorescence analysis of glasses, rocks, refractories and raw materials 226
Ménard C, see Lawrence JF 494
Meyer A, see Yao S, et al. 207
Mille G, Almallah M, Bianchi M, van Wambeke F, Bertrand JC: Effect of salinity on petroleum biodegradation 788
Miller CT, see Roche AC 732
Misfeld J, see Grimmer G, et al. 792
Mochizuki T, Sakashita A, Iwata H, Ishibashi Y, Gunji N: Application of slurry nebulization to trace elemental analysis of some biological samples by inductively coupled plasma mass spectrometry 889
Mohr U, see Grimmer G, et al. 792
Morales M, see Escrivá C, et al. 743
Morel G, Samhan O, Literathy P, Al-Hashash H, Moulin L, Saeed T, Al-Matrouk K, Martin-Bouyer M, Saber A, Paturel L, Jarosz J, Vial M, Combet E, Fachinger C, Suptil J: Evaluation of chromatographic and spectroscopic methods for the analysis of petroleum-derived compounds in the environment 699
Morel G, see Saber A, et al. 716
Morin P, Amran MB, Favier S, Heimburger R, Leroy M: Speciation of arsenical species by anion-exchange and ion-pair reversed-phase liquid chromatography 504
Mothes B, see Dedek W, et al. 201
Moulin L, see Morel G, et al. 699
Müller J, see Angerer J, et al. 740
Müller KP, Rudolph J: Application of an improved method for measurements of gaseous nitric acid in the nonurban atmosphere 661
Muntau H, see Griepink B, et al. 173
Muntau H, see Griepink B, et al. 599

Mussini PR, see Mussini T, et al. 608
Mussini T, Longhi P, Marcolungo I, Mussini PR, Rondinini S: Status and problems of standardization of pH scales for controls in different media. Reference value standards in ethylene glycol/water mixed solvents 608

Naffrechoux E, see Thomas O, et al. 463
Najdeker E, see Golimowski 868
Nano G, see Sesana G, et al. 485
Naujack K-W, see Grimmer G, et al. 792
Nerin C, Echarri I, Cacho J: Determination of HCHs in sediments of the River Gallego 684
Nießner R, see Weil L, et al. 468
Nymoen U, see Langseth W 245

Oberländer H, see Dedek W, et al. 201
Odanaka Y, Matano O, Goto S: The use of solid bonded-phase extraction as alternative to liquid-liquid partitioning for pesticide residue analysis of crops 368
Okochi H, see Kujirai O, et al. 133
Olthof PDA, see Baumann RA, et al. 357
Oriňák A, Holovská K, Budínska V: Optical activity of the background caused by sheep organ tissue extracts and its effect on spectrophotometric determination of the herbicide bentazone 436
Ortner HM, see Havezov I, et al. 871

Pala M, see Valerio F 777
Paller G, see Hoffmann P, et al. 230
Pålsheden H, see Andersson A 365
Papathakis ML, see Lee SM, et al. 376
Paturel L, see Morel G, et al. 699
Paturel L, see Saber A, et al. 716
Pérez S, García-Baudín JM, Tadeo JL: Determination of chlorotoluron, isoproturon and metoxuron in soil by GLC-NPD and confirmation using GLC-MS 413
Pingarrón Carrazón JM, see Chico Guijarro E, et al. 193
Plaami S, Kumpulainen J: Characterization of ARC/CL wheat flour and potato powder reference materials for content of total dietary fiber 886
Plass C, Koppmann R, Rudolph J: Measurements of dissolved nonmethane hydrocarbons in sea water 746
Polo Díez LM, see Chico Guijarro E, et al. 193
Poynter J, Eglinton G: The biomarker concept – strengths and weaknesses 725
Puxbaum H, see Lanzerstorfer C 223

Quevauviller Ph, Donard OFX: Organotin stability during storage of marine waters and sediments 6
Quevauviller P, see Griepink B, et al. 599

Raju J, Gupta VK: A simple spectrophotometric determination of endosulfan in river water and soil 431
Rauret G, see Matia L, et al. 455
Reichert J, Sellien W, Ache HJ: An optical ammonium-sensor for the analysis of environmental waters 467
Restelli G, see Rindone B, et al. 673
Riederer P, see Sofic E, et al. 258
Rindone B, Andreoni V, Rozzi A, Sorlini C: Analysis and anaerobic degradation of wool scouring and olive oil mill wastewaters 669
Rindone B, Cariati F, Restelli G, Hjorth J: Products and mechanism of the gas phase reaction between nitrate radical and arenes 673
Roche AC, Miller CT: Assessment of extraction methodologies for measuring subsurface contamination 732
Rondinini S, see Mussini T, et al. 608
Roos AH, see Tuinstra LGMT, et al. 384
Rosell A, Grimalt JO, Rosell MG, Guardino X, Albaigés J: The composition of volatile and particulate hydrocarbons in urban air 689
Rosell MG, see Rosell A, et al. 689
Rosset R, see Hennion M-C, et al. 488
Rousselle T, see Thomas O, et al. 463
Rozzi A, see Rindone B, et al. 669
Rubio R, see Matia L, et al. 455
Rudolph J, see Müller KP 661
Rudolph J, see Plass C, et al. 746
Ruppert T, see Weil L, et al. 468

Saber A, Morel G, Paturel L, Jarosz J, Martin-Bouyer M, Vial M: Application of the high-resolution low temperature spectrofluorometry to analysis of PAHs in lake sediments, marine intertidal sediments and organisms 716
Saber A, see Morel G, et al. 699
Saeed T, see Morel G, et al. 699
Sakashita A, see Mochizuki T, et al. 889
Saliot A, see Bouloubassi I 765
Salvador A, see de Benzo ZA, et al. 235
Samhan O, see Morel G, et al. 699
Schäfer O, see Weil L, et al. 468
Schaller KH, see Angerer J, et al. 740
Schepers U, see Fegert A, et al. 441
Scherer, G, see Angerer J, et al. 740
Schlett C: Multi-residue-analysis of pesticides by HPLC after solid phase extraction 344
Schneider RJ, see Weil L, et al. 468
Schreurs M, Gooijer C, Velthorst NH: Application of long-lived luminescence for detection in liquid chromatography 499
Schullerer S, see Brauch H-J 420
Schuster M, see Vest P, et al. 142
Schwarz B, see Fegert A, et al. 441
Schwedt G, see Lange-Hesse K, et al. 240
Sellien W, see Reichert J, et al. 467
Sesana G, Nano G, Baj A, Balestreri S: New sampling tool for airborne volatile aldehydes 485
Sieńkowska-Zyskowska E, see Kozłowski E, et al. 19
Sieńkowska-Zyskowska E, see Kozłowski E, et al. 882
Siltaloppi L, see Tummavuori J, et al. 145
Simó R, Grimalt JO, Colom-Altés M, Albaigés J: The lipid composition of the Western Mediterranean aerosol 757
Sippola E, Himberg K: Determination of toxic PCB congeners in biological samples by multidimensional gas chromatography-mass spectrometry (GC/GC/MS) 510
Snowdon PJ, Whiteoak RJ, Manley JD: The hydrolysis of clofentezine and related tetrazines as the basis of determination of residues in bovine tissues 444
Sofic E, Riederer P, Burger R, Gsell W, Heuschneider G: Determination of glutathione, glutathione disulphide, ascorbic acid and dehydroascorbic acid in tissues by reversed-phase liquid chromatography with electrochemical detection 258
Solé M, see Barceló D, et al. 676
Sorlini C, see Rindone B, et al. 669
Stan H-J, Bockhorn A: Determination of triazine herbicides with GC/MS under EI, methane CI and ammonia CI conditions detecting positive and negative ions 158
Stan H-J, Christall B: Residue analysis of onions and other foodstuffs with a complex matrix using two-dimensional capillary-GC with three selective detectors 395
Stan H-J, Heil S: Two-dimensional capillary gas chromatography with three selective detectors as a valuable tool in residue analysis – state-of-the art 34
Stan H-J, Klaffenbach P: Determination of carbamate pesticides and some urea pesticides after derivatization with acetic anhydride by means of GC-MSD 151
Stan H-J, Klaffenbach P: Determination of thermolabile urea pesticides after derivatization with HFBA using GC-ECD and confirmation by means of GC-MSD 40
Steinwandter H: Contributions to residue analysis in soils. II. Miniaturization of the on-line extraction method for the determination of some triazine compounds by RP-HPLC 30
Stephanou EG: Analysis of anthropogenic and biogenic lipids in the aerosol of a coastal area in East Mediterranean Sea 780

Stieglitz L, see Först C, et al. 513
Stingl U, see Hoffmann P, et al. 230
Stitz A, Buchberger W: Determination of sugars, sugar degradation products and alcohols by high-performance liquid chromatography with electrochemical detection 55
Subra P, see Hennion M-C, et al. 488
Suptil J, see Morel G, et al. 699
Suptil J, see Thomas O, et al. 463
Susetyo W, Carreira LA, Azarraga LV, Grimm DM: Fluorescence techniques for metal-humic interactions 624

Tadeo JL, see Pérez S, et al. 413
Takeda K, Akamatsu C, Inoue Y: Pre-concentration of traces of tin by coprecipitation with yttrium hydroxide for electrothermal atomisation atomic absorption spectrometry 50
Tarradellas J, see Tolosa I, et al. 646
Thier H-P, see Gardyan C 338
Thomas O, Fachinger C, Naffrechoux E, Rousselle T, Suptil J: A new procedure for the survey of the quality of waters 463
Thybusch B, see Hoffmann P, et al. 230
Timm J, see Grimmer G, et al. 792
Tölg G: Why do we need more powerful methods in environmental trace analysis of the elements and what scope exists? 451
Tolosa I, Bayona JM, Albaigés J, Alencastro LF, Tarradellas J: Organotin speciation in aquatic matrices by CGC/FPD, ECD and MS, and LC/MS 646
Traag WA, see Tuinstra LGMT, et al. 384
Türker AR, see Arik N 874
Tuinstra LGMT, Roos AH, Matser AM, Traag WA, van Rhijn JA: Development of a multi-residue/multi-matrix method for pesticide analysis in agricultural products 384
Tuinstra LGMT, see Baumann RA, et al. 357
Tummavuori J, Hankala S, Siltaloppi L: Determination of platinum and iridium in reforming catalysts by second derivative and absorptiometric spectrophotometry 145

Ulrich P, see Weil L, et al. 468

Valcárcel M, see Infantes JA, et al. 58
Valerio F, Pala M: Effects of temperature on the concentration of polycyclic aromatic hydrocarbons (PAHs) adsorbed onto airborne particulates 777
Valls M, Bayona JM: Characterization of cationic surfactant markers and their abiotic degradation products by CGC-EI/PICI MS 212
van Rhijn JA, see Tuinstra LGMT, et al. 384
van Wambeke F, see Mille G, et al. 788
van Zoonen P, see Baumann RA, et al. 357
van Zoonen P, see Hogendoorn EA, et al. 348
VDLUFA, Section XI, "Environmental-Analysis", see Legler J 417
Velosa M, see de Benzo ZA, et al. 235
Velthorst NH, see Ariese F, et al. 722
Velthorst NH, see Schreurs M, et al. 499
Verwaal W, see Baumann RA, et al. 357
Vest P, Schuster M, König K-H: Influence of tin(II) chloride on the solvent extraction of platinum group metals with N,N-di-n-hexyl-N′-benzoylthiourea 142
Veuthey J-L, see Coquet A, et al. 475
Veuthey J-L, see Descombes AA, et al. 480
Vial M, see Morel G, et al. 699
Vial M, see Saber A, et al. 716

Wang F, see Ci Y-X 46
Wawer A, see Kupka T, et al. 253
Weber RR, see Ehrhardt M 772
Weil H, Haberer K: Multimethod for pesticides in soil at trace level 405
Weil L, Schneider RJ, Schäfer O, Ulrich P, Weller M, Ruppert T, Nießner R: A heterogeneous immunoassay for the determination of triazine herbicides in water 468
Weller M, see Weil L, et al. 468
Wells DE, see Griepink B, et al. 173
Wenzel-Hartung R, see Grimmer G, et al. 792
Wenzel K-D, see Dedek W, et al. 201
Werner G, see Hagen A, et al. 26
Whiteoak RJ, see Snowdon PJ, et al. 444
Witting U, see Binding N 218
Wong PTS, see Chau YK 640

Yamada K, see Kujirai O, et al. 133
Yáñez-Sedeño P, see Chico Guijarro E, et al. 193
Yao S, Meyer A, Henze G: Comparison of amperometric and UV-spectrophotometric monitoring in the HPLC analysis of pesticides 207
Yeh K-Y, see Liu C-Y, et al. 877
Yoshida H, see Hasebe K, et al. 261

Zacharias PS, see Kupka T, et al. 253
Zhao Z, see Gao Z, et al. 137

Short communications

Abdalla MM, see Zaki MTM, et al. 197
Abdel-Kader AK, see Zaki MTM, et al. 197
Amlathe S, Gupta VK: Spectrophotometric determination of phenol in air 199
Asano S, see Tanaka M, et al. 63

Gupta VK, see Amlathe S 199
Gupta VK, see Raju J 897

Kawaguchi Y, see Tanaka M, et al. 63
Kintz P, Tracqui A, Mangin P: Mass spectrometric profile of zopiclone 62
Kir S, Şafak C, Türeli A, Temizer A: Determination of paracetamol and methocarbamol in a pharmaceutical preparation using second derivative spectrophotometry 264

Mangin P, see Kintz P, et al. 62

Raju J, Gupta VK: Thin-layer chromatographic method for the detection of carbaryl using diazotized p-nitro-aniline and diazotized p-amino-acetophenone 897

Şafak C, see Kir S, et al. 264
Shono T, see Tanaka M, et al. 63

Tanaka M, Asano S, Yoshinaga M, Kawaguchi Y, Tetsumi T, Shono T: Separation of racemates by capillary zone electrophoresis based on complexation with cyclodextrins 63

Tan AM: Simultaneous determination of cobalt and nickel by use of their overlapping polarographic peaks 895
Temizer A, see Kir S, et al. 264
Tetsumi T, see Tanaka M, et al. 63
Tracqui A, see Kintz P, et al. 62
Türeli A, see Kir S, et al. 264

Yoshinaga M, see Tanaka M, et al. 63

Zaki MTM, Abdel-Kader AK, Abdalla MM: Spectrophotometric determination of trace amounts of molybdenum using morin and cetylpyridinium chloride 197

Letter to the editor

Bode H: On Sandell's sensitivity 898

Erratum 265

Application notes

Carl RT: Quantification of the fat content of milk using a partial-least-squares method of data analysis in the near infrared 70
Fries A, Rothe K: The Biomek 1000 – A laboratory workstation which, due to its modular structure, becomes an adapted system i.e. for ELISA assays in feed and food analysis 534

Hogue R: 'Praying Mantis' diffuse reflectance accessory for UV-Vis-NIR spectroscopy 68

Kradjel C: An overview of Near Infrared spectroscopy: from an application's point of view 65
Krishnan K, see Wrigth N, et al. 271

Lightbody BG, see Nelson KE 529

Nelson KE, Lightbody BG: Practical techniques for feedback and control of laboratory automation systems 529

Rothe K, see Fries A 534

Sawatzki J: Fourier Transform Raman microspectroscopy 267
Stout P, see Wrigth N, et al. 271

Wrigth N, Stout P, Krishnan K: Fourier Transform Raman spectrometry 271

Zenie FH: The future of laboratory automation urgency, technology and strategy 797

Expert system note

Schumnig K, see Wünsch G 800

Wünsch G, Schumnig K: Entscheidungsmodell zur Auffindung optimaler Strategien in der Analytik. 3. Mitteilung: Strukturierung von Wissen für Expertensysteme mit Hilfe von Kenngrößen und Frames 800

New books 72, 276, 539, 808

Abstracts

1 General analytical chemistry

1.1 Fundamentals, methods, apparatus, reagents, automation, data processing 75, 278, 541, 810

1.2 Inorganic analysis 89, 291, 556, 822

1.3 Organic analysis 95, 295, 561, 826

2 Particular products and fields of application

2.1 Inorganic industrial products 100, 565, 829

2.2 Organic industrial products 105, 299, 568, 831

2.3 Geological materials 109, 571, 835

2.4 Environmental matrices 111, 301, 572, 837

2.5 Soils, plants and agricultural technical products 305, 576, 842

2.6 Foods 115, 308, 578, 844

2.7 Pesticides 312, 583

2.8 Pharmaceuticals and cosmetics 118, 315, 849

3 Biochemical and clinical analysis 122, 318, 585, 855

Indexed in *Current Contents*

Author index 899

Subject index 915